

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: 11/4/71

Project Title: **Heavy Minerals Sampling Program**

Project No.: **A-232-587**

Project Director: **Dr. J. E. Husted**

Sponsor: **El Paso Natural Gas Company**

Effective **November 1, 1971** Estimated to run until: . . . **December 15, 1971**

Type Agreement: . **Letter dated November 1, 1971** Amount: \$ **1,050**

Reports: As required

**Contact Person: Claude E. Barron
Senior Mining Geologist
El Paso Natural Gas Company
El Paso, Texas 79999**

Assigned to **Chemical Sciences & Materials** Division

COPIES TO:

- | | |
|--|--|
| <input type="checkbox"/> Project Director | <input type="checkbox"/> Photographic Laboratory |
| <input type="checkbox"/> Director | <input type="checkbox"/> Research Security Officer |
| <input type="checkbox"/> Associate Director | <input type="checkbox"/> Accounting |
| <input type="checkbox"/> Assistant Director(s) | <input type="checkbox"/> Purchasing |
| <input type="checkbox"/> Division Chiefs | <input checked="" type="checkbox"/> Report Section |
| <input type="checkbox"/> Branch Head | <input checked="" type="checkbox"/> Library |
| <input type="checkbox"/> General Office Services | <input type="checkbox"/> Rich Electronic Computer Center |
| <input type="checkbox"/> Engineering Design Services | <input type="checkbox"/> _____ |

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT TERMINATION

Date 1/26/72

PROJECT TITLE: **Heavy Minerals Sampling Program**

PROJECT NO: **A-232-587**

PROJECT DIRECTOR: **Dr. J. E. Husted**

SPONSOR: **El Paso Natural Gas Company**

TERMINATION EFFECTIVE: 1/25/72

CHARGES SHOULD CLEAR ACCOUNTING BY: 2/29/72

Final Report sent January 25, 1972.

Chemical Sciences & Materials Division

COPIES TO:

Project Director
Director
Associate Director
Assistant Directors
Division Chief
Branch Head
Accounting
Engineering Design Services

General Office Services
Photographic Laboratory
Purchasing
Report Section
Library ✓
Security
Rich Electronic Computer Center



GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest Atlanta, Georgia 30332

A-232-587

January 25, 1972

Mr. Claude E. Barron
Senior Mining Geologist
Mining Division
El Paso Natural Gas Company
El Paso, Texas 79999

Subject: Project A-232-587

Dear Mr. Barron:

Enclosed please find results from the six holes augured on the Youman tract of the Georgia-Pacific Corporation in Long County, Georgia.


The results are arranged as follows: a xerox copy of the portion of the topographic quadrangle in which the tract is found, showing approximate location of the holes; a description of the hole locations and of the samples recovered from the holes; a table showing sample weights with percentages of sizes less than 200 mesh, 28 x 200 mesh, and plus 28 mesh; also shown is the percent of heavy minerals in total sample. An additional table shows a rough estimate of mineral composition, excepting sample B-3, where the percentage is based on a 600 grain count.

Please instruct us concerning disposition of the cloth bags of samples left from the cut and the glassine bags of heavy mineral concentrate.

If additional holes are drilled, I would suggest that they be along the fence of the field above hole B, at the northeast corner of the field, and one along the fence back toward AA.

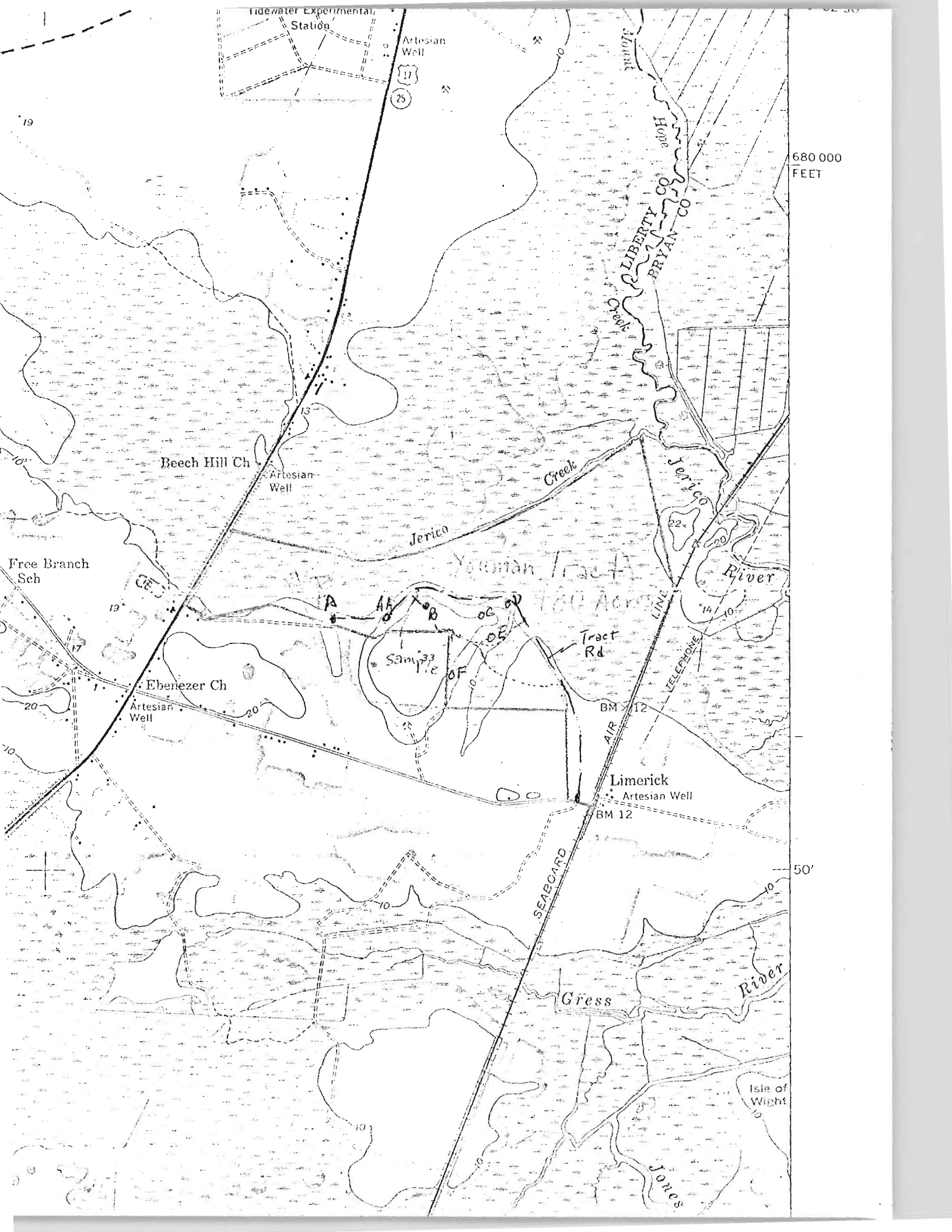
It has been a pleasure working with you and I hope that the future will bring additional opportunity.

Sincerely yours,

 John E. Husted
Professor

JEH/edh

Enclosure



680 000
FEET

HOLE LOCATION
AND SAMPLE DESCRIPTION

Hole A Located on road (near end) at a position 29.8' N.E. of Surveyor's flag that is first flag east of flag on west bank of creek from dam. Flagged with "peppermint" colored plastic.

Hole penetrated about 18 inches of sand-clay, then to 10 feet of depth penetrated a grey, highly plastic, clay. At 10 feet of depth, hole penetrated sand which would not stay in holder because of water. Water rose in hole very rapidly to within 14 inches of surface. Hole abandoned at this point.

Hole AA Hole located on south side of road, due north of eastern-most bend in fence near barn. Hole flagged by flag on black (?) oak 20 feet south of road.

AA-1 composite sample; 0-5 feet of depth; bags 1 through 9.

Bag 1 - Humus and sand
Bag 2 - Light tan sand
Bag 3 - Light tan sand; fine
Bag 4 - Tan and brown clay with sand
Bag 5 - Brown clay and sand
Bag 6 - Tan sand and gravel
Bag 7 - Tan sand with some brown
Bag 8 - Brown sand; red sand and clay
Bag 9 - Brown sand and clay

AA-2 composite sample; 5-9 feet of depth; bags 10-16.

Bag 10 - Brown sand, small amount of grey
Bag 11 - Same as 10
Bag 12 - Less clay, brown and tan sand
Bag 13 - Tan sand and clay
Bag 14 - Tan sand and clay - small amount of grey
Bag 15 - Tan sand, increase in clay
Bag 16 - Very light tan sand and clay

AA-3 composite sample; 9-13 feet of depth; bags 17-25.

Bag 17 - Very light buff sand and clay
Bag 18 - Light buff or beige sand mixed with red clay and sand
Bag 19 - Same as 18; "lumpy" when wet
Bag 20 - Same as 18

- Bag 21 - Whitish clay
- Bag 22 - Light buff clay and sand
- Bag 23 - Buff sand - small amount of clay
- Bag 24 - Near white sand with clay
- Bag 25 - Same as 25

AA-4 composite sample; 13-17 feet of depth; bags 26-32.
Water table at 16 feet of depth

- Bag 26 - Mostly light buff sand and clay, stringers of red and orange clay
- Bag 27 - Near white and light buff sand and clay, some orange
- Bag 28 - Whitish sand, some clay
- Bag 29 - Light buff with some red sand and clay
- Bag 30 - More clay - same colors
- Bag 31 - Same as 30
- Bag 32 - Same as 30

Hole B

In small clearing on west side of road leading uphill from perimeter road to northeast corner of cleared field. Hole B is just above leveling-out of road, several hundred feet beyond (south) of original hole by C. C. Ostrander. Trees flagged at hole.

B-1 composite sample; 0-5 feet of depth; bags 1-8.

- Bag 1 - Fine brown sand. some humus
- Bag 2 - Fine brown sand
- Bag 3 - Slightly lighter colored fine brown sand
- Bag 4 - Fine tan sand
- Bag 5 - Same as 4
- Bag 6 - Brown clay - small amount clay
- Bag 7 - Same as 6 - slight reddish tint
- Bag 8 - Same as 7

B-2 composite sample; 5-9 feet of depth; bags 9-14.

- Bag 9 - Light brown sand, small amount of clay
- Bag 10 - Light tan sand with light tan nodules
- Bag 11 - Same as 10
- Bag 12 - Tan and brown sand
- Bag 13 - Tan and light brown - some pinkish sand
- Bag 14 - Brown with pinkish cast

B-3 composite sample; 9-13 feet of depth; bags 15-23

- Bag 15 - Same as 14, visible ilmenite
- Bag 16 - Same as 15
- Bag 17 - Same as 15
- Bag 18 - Same as 15
- Bag 19 - Same color, but coarser with some gravel at 12 feet
- Bag 20 - Lighter brown, more gravel
- Bag 21 - No gravel, light brown sand
- Bag 22 - Light brown to light tan sand
- Bag 23 - Tan, coarse sand and gravel

B-4 composite sample; 13-17 feet of depth, bags 24-36

- Bag 24 - Same as 23
- Bag 25 - Some gravel with fine sand, tan
- Bag 26 - Fine, tan sand
- Bag 27 - Same as 26
- Bag 28 - Fine tan sand and gravel, some brown
- Bag 29 - Coarse tan sand and gravel
- Bag 30 - Less gravel, fine tan sand
- Bag 31 - Fine tan sand
- Bag 32 - Same as 31 with some gravel
- Bag 33 - Coarse sand and gravel
- Bag 34 - Fine tan sand with touch of brown
- Bag 35 - Light tan fine sand
- Bag 36 - Same, touch of brown

Hole C

Hole located N.60°E. from northeast corner of cleared field on end of topographic nose where break is in three directions between two flagged black gum trees about 7 to 8 feet apart.

C-1 composite sample; 0-5 feet of depth; bags 1-8.

- Bag 1 - Fine brown sand
- Bag 2 - Fine tan sand
- Bag 3 - Fine, light tan sand
- Bag 4 - Same as 3
- Bag 5 - Same as 3, touch of brown
- Bag 6 - Tan and brown sand
- Bag 7 - Same as 6 but more brown
- Bag 8 - Tan and brown sand

C-2 composite sample; 5-9 feet of depth; bags 9-15.

- Bag 9 - Brown and tan sand, some clay
- Bag 10 - Same as 9
- Bag 11 - Same as 9
- Bag 12 - Same as 9
- Bag 13 - Brown sand with clay, touch of tan, some ilmenite
- Bag 14 - Brown sand and clay - some reddish clay
- Bag 15 - Brown sand with reddish tint

C-3 composite sample; 9-13 feet of depth; bags 16-22.

- Bag 16 - Brown to tan sand with reddish tint
- Bag 17 - Brown sand, some tan, chert sliver
- Bag 18 - Brown and tan sand
- Bag 19 - Brown sand, some clay
- Bag 20 - Brown sand and clay
- Bag 21 - Same as 20
- Bag 22 - Dark brown sand

C-4 composite sample; 13-17 feet of depth; bags 23-30

Bag 23 - Dark brown sand
Bag 24 - Dark brown sand, some light tan
Bag 25 - Same as 24
Bag 26 - Dark brown sand, not quite as dark as 23
Bag 27 - Same as 26
Bag 28 - Same as 26
Bag 29 - Same as 26
Bag 30 - Same as 26

Hole D

On high point of main tract road on topographic nose. Hole on south side of road opposite large hickory tree. Hickory tree flagged.

D-1 composite sample; 0-5 feet of depth; bags 1-8.

Bag 1 - Light brown sand
Bag 2 - Same as 1
Bag 3 - Same as 1
Bag 4 - Same as 1 with slightly more clay
Bag 5 - Same as 4
Bag 6 - Same as 4
Bag 7 - Same as 4 with slight pink tint
Bag 8 - Light brown sand and clay

D-2 composite sample; 5-9 feet of depth; bags 9-15.

Bag 9 - Brown sand and clay with some pink
Bag 10 - Light brown to tan sand and clay
Bag 11 - Tan sand and clay
Bag 12 - Light tan and brown sand and clay
Bag 13 - Very light tan sand and clay
Bag 14 - Very light tan with touch of brown, heavy with clay
Bag 15 - Same as 14

D-3 composite sample; 9-13 feet of depth; bags 15-22.

Bag 16 - Same as 14 plus some white sand
Bag 17 - Brown sand with small amount very light tan clay
Bag 18 - Same as 17
Bag 19 - Same as 17
Bag 20 - Same as 17
Bag 21 - Very light tan sand, some light red clay, ilmenite
Bag 22 - Reddish clay and sand, some grey clay

D-4 composite sample; 13-17 feet of depth; bags 23-29

Bag 23 - Light tan sand, reddish clay
Bag 24 - Same as 23 with slightly more clay
Bag 25 - Reddish-orange clay and sand, some tan

- Bag 26 - White sand, some reddish and grey clay
- Bag 27 - Reddish clay and sand
- Bag 28 - Same as 27, light tan, plus grey clay and sand
- Bag 29 - Tan sand and clay

Hole E

Seventeen feet from road on north side of side road along south side of topographic nose, about half way down slope at topographic break. Flagged at about 15 feet from road near hole. Road joins main tract road near "D"

E-1 composite sample; 0-5 feet of depth; bags 1-7.

- Bag 1 - Brown sand and humus
- Bag 2 - Same as 1
- Bag 3 - Brown to tan sand
- Bag 4 - Light tan sand
- Bag 5 - Very light tan sand
- Bag 6 - Same as 5
- Bag 7 - Tan sand, some brown

E-2 composite sample; 5-9 feet of depth; bags 8-14.

- Bag 8 - Tan sand
- Bag 9 - Light tan sand - some clay
- Bag 10 - Light tan sand with some brown sand and clay
- Bag 11 - Brown sand and clay - some tan
- Bag 12 - Brown sand and clay
- Bag 13 - Same as 12
- Bag 14 - Same as 12

E-3 composite sample; 9-13 feet of depth; bags 15-20.

- Bag 15 - Brown sand and clay - touch of tan
- Bag 16 - Tan and brown sand - more clay
- Bag 17 - Tan clay and sand - some brown
- Bag 18 - Tan sand and clay
- Bag 19 - Same as 18
- Bag 20 - Light tan sand and clay

E-4 composite sample; 13-17 feet of depth; bags 21-29.

- Bag 21 - Brown and tan sand and clay
- Bag 22 - Same as 21 but some pink
- Bag 23 - Brown sand and clay with pink cast
- Bag 24 - Same as 23
- Bag 25 - Same as 23
- Bag 26 - Same as 23
- Bag 27 - Slightly lighter shade of tan
- Bag 28 - Brown to light brown sand and clay
- Bag 29 - Brown and some tan sand and clay

Hole F

East side of road beside a small pine, along east side of cleared field. About 40 feet north of new stand of pines on south side of field. Pine flagged.

F-1 composite sample; 0-5 feet of depth; bags 1-12.

- Bag 1 - Grey sand and humus
- Bag 2 - Grey to tan sand
- Bag 3 - Tan sand
- Bag 4 - Tan sand
- Bag 5 - Light tan sand
- Bag 6 - Same as 5
- Bag 7 - Tan sand
- Bag 8 - Light tan sand
- Bag 9 - Same as 8
- Bag 10 - Same as 8
- Bag 11 - Very light tan sand
- Bag 12 - Same as 11

F-2 composite sample; 5-9 feet of depth; bags 13-22.

- Bag 13 - Brownish - red sand, some tan
- Bag 14 - Brown sand and clay - pink tint
- Bag 15 - Brown sand and clay with red tint
- Bag 16 - Same as 15
- Bag 17 - Same as 15
- Bag 18 - Same as 15
- Bag 19 - Same as 15
- Bag 20 - Same as 15
- Bag 21 - Same as 15
- Bag 22 - Same as 15

F-3 composite sample; 9-13 feet of depth; bags 23-33.

- Bag 23 - Brown - reddish sand and clay
- Bag 24 - Same as 23
- Bag 25 - Same as 23
- Bag 26 - Same as 23
- Bag 27 - Tan and brown sand
- Bag 28 - Tan and brown sand
- Bag 29 - Coarser brown sand - reddish
- Bag 30 - Light brown sand, reddish tint
- Bag 31 - Reddish brown to tan sand
- Bag 32 - Coarse reddish brown sand
- Bag 33 - Same as 32 but lighter

F-4 composite sample; 13-17 feet of depth; bags 34-43.

- Bag 34 - Tan sand
- Bag 35 - Tan sand plus small amount of gravel
- Bag 36 - Tan sand

Bag 37 - Tan sand
Bag 38 - Tan sand with some gravel
Bag 39 - Same as 38
Bag 40 - Light tan sand and gravel
Bag 41 - Same as 40 plus more gravel
Bag 42 - Same as 41
Bag 43 - Same as 41

PARTICLE SIZE AND AMOUNT OF HEAVY MINERALS

(All Weights in Grams)

Composite Sample No.	Dry Wt. Total Sample	Dry Wt. +200	Dry Wt. -200 by Diff.	Dry Wt. 28 x 200	Dry Wt. +28 by Diff.	Wt. Hvy. Min in 28 x 200	% Hvys in 28 x 200 of Total Sample	Depth in Feet
A - 1	336.0	290.3	45.7	252.8	37.5	3.10	0.92	0-5
A - 2	263.3	225.0	38.3	207.7	17.3	2.95	1.12	5-9
A - 3	342.3	258.9	83.4	248.5	10.4	1.68	0.49	9-13
A - 4	292.3	237.7	54.6	234.9	2.8	1.55	0.53	13-17
- 1	303.2	262.3	40.9	253.0	9.3	6.47	2.13	0-5
- 2	248.4	224.3	24.1	218.7	5.6	8.50	3.42	5-9
- 3	269.7	261.2	8.5	243.2	18.0	12.82	4.75	9-13
- 4	326.5	318.0	8.5	265.8	52.3	4.73	1.45	13-17
- 1	334.6	317.0	17.6	311.7	6.7	4.43	1.32	0-5
- 2	317.8	291.8	26.0	287.1	4.7	3.83	1.21	5-9
- 3	297.6	279.2	18.4	275.3	3.9	3.47	1.17	9-13
- 4	336.0	321.0	15.0	305.3	15.7	4.85	1.44	13-17
- 1	311.8	283.2	28.6	235.2	48.0	4.13	1.32	0-5
- 2	275.1	240.8	34.3	228.4	46.7	2.98	1.08	5-9
- 3	244.7	227.8	16.9	225.2	19.5	2.10	0.86	9-13
- 4	281.3	246.8	34.5	243.2	37.8	2.23	0.79	13-17
- 1	275.5	262.7	12.8	258.1	17.4	3.60	1.31	0-5
- 2	275.6	252.6	23.0	248.3	27.3	3.61	1.31	5-9
- 3	241.2	221.6	19.6	218.0	23.2	3.32	1.38	9-13
- 4	344.1	313.7	30.0	308.5	35.6	4.38	1.27	13-17
- 1	319.0	289.0	30.0	283.0	6.0	3.30	1.03	0-5
- 2	209.9	179.5	30.4	175.7	3.8	2.13	1.02	5-9
- 3	332.2	311.6	20.6	291.3	20.3	2.09	0.63	9-13
- 4	335.4	324.4	11.0	274.0	70.7	2.88	0.86	13-17

ROUGH ESTIMATE OF HEAVY MINERAL CONTENT

Sample Number	Estimate Ilmenite	Estimate Rutile	Estimate Other
AA 1	40%	15%	45%
2	30%	10%	70%
3	50%	20%	30%
4	30%	20%	50%
B 1	40%	25%	35%
2	40-45%	20%	40-35%
*3	35.5%	19.0%	45.5%
4	25%	5-10%	65-70%
C 1	33%	52-57%	10-15%
2	40%	5%	55%
3	45-50%	20-25%	30%
4	35%	15%	50%
D 1	30%	5-10%	60-65%
2	10%	5%	85%
3	25%	15%	60%
4	25%	10%	65%
E 1	25%	20%	55%
2	25%	25%	50%
3	35%	20%	45%
4	20%	5%	75%
F 1	20%	10%	70%
2	30%	20%	50%
3	15%	less than 5%	80+%
4	20%	5%	75%

*Based on Count of 600 Grains.